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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Alfred J. Huang

Attorney Docket No.: SUN1P710/P5267

Patent: 6,892,379 B2

Issued: May 10, 2005

Title: METHODS AND APPARATUS FOR USE IN AIDING STACK UNWINDING

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the U.S. Postal Service with sufficient postage as first-class mail on July 7, 2005 in an envelope addressed to the Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450.

Signed: _____

Aurelia M. Sanchez

REQUEST FOR CERTIFICATE OF CORRECTION OF OFFICE MISTAKE (35 U.S.C. §254, 37 CFR §1.322)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450
Attn: Certificate of Correction

Dear Sir:

Attached is Form PTO-1050 (Certificate of Correction) at least one copy of which is suitable for printing. The errors together with the exact page and line number where the errors are shown correctly in the application file are as follows:

SPECIFICATIONS:

1. Column 5, line 31, change "Ic" to --lc--. This appears correctly in the patent application as filed on June 20, 2001 on page 13, line 4.

CLAIMS:

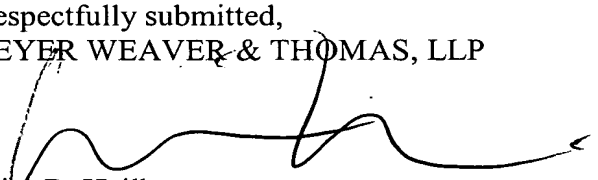
1. In line 5 of claim 1 (column 7, line 62) change "one more source" to --one source--. This appears correctly in Amendment A, as filed on August 10, 2004 on page 2, paragraph 1, line 4.

2. In line 7 of claim 7 (column 8, line 47)) change "more encoded data" to --encoded data--. This appears correctly in Amendment A, as filed on August 10, 2004 on page 3, paragraph 2, line 5.

Patentee hereby requests expedited issuance of the Certificate of Correction because the error lies with the Office and because the error is clearly disclosed in the records of the Office. As required for expedited issuance, enclosed is documentation that unequivocally supports the patentee's assertion without needing reference to the patent file wrapper.

It is noted that the above-identified errors were printing errors that apparently occurred during the printing process. Accordingly, it is believed that no fees are due in connection with the filing of this Request for Certificate of Correction. However, if it is determined that any fees are due, the Commissioner is hereby authorized to charge such fees to Deposit Account 500388 (Order No. SUN1P710).

Respectfully submitted,
BEYER WEAVER & THOMAS, LLP



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Third, the SAVE_OP category sub directive is used to indicate a source register or source memory location from which contents are to be obtained and a destination register or destination memory location to which the obtained contents (e.g., date) are to be saved or stored. One format that may be used is indicated by the pseudo-code "**save** FROM_REG INTO". As shown, data may be obtained from various registers such as IA64 specific registers listed. These registers include **psp, pfs, rp, preds, unat, lc, fpsr, priunat, bsp, bspstore, and rnat**. The data obtained from one of these registers may then be saved into a register or memory location. The memory location may be specified or indicated through an offset, which may be a previous stack pointer offset (e.g., **pspoff**) or a stack pointer offset (e.g., **spoff**). In this manner, a displacement with reference to a memory stack may be specified.

Fourth, the SPILL_OP category sub directive is used to indicate a memory location or register to which information from a register is to be spilled. More particularly, similar to the SAVE_OP category sub directive, spilling is often performed to prevent information in a register from being overwritten (e.g., between function calls). For example spilling may be performed for special function, such as a variable argument function. In accordance with one embodiment of the invention, spilling may be performed for one or more registers simultaneously. More specifically, the memory location may be indicated relative to a stack pointer (SP) or previous stack pointer (PSP). As shown, SPILL_BASE_OP (e.g., **spill spillbase**= NUM) identifies a PSP relative offset to be used as the starting memory location for

Please **AMEND** the claims as follows:

1. (Currently Amended) In a compiler, a method of generating assembly code to aid in stack unwinding of a memory stack, the method comprising:

obtaining ~~one or more~~ at least one source code line ~~lines~~; and

generating assembly code for the ~~one or more~~ at least one source code line ~~lines~~, the assembly code including ~~one or more~~ at least one stack unwind assembler directive ~~directives~~, each of the stack unwind assembler directives having ~~one or more~~ at least one associated stack unwind sub directive ~~directives~~, each ~~of the~~ stack unwind assembler directive ~~directives~~ being adapted for indicating to an assembler that ~~one or more~~ at least one encoded data section ~~sections~~ containing information to be used during stack unwinding is to be generated in an object file from the ~~one or more~~ at least one associated stack unwind sub directive ~~directives~~, thereby enabling the assembler to generate the at least one encoded data section to be used during stack unwinding, wherein each stack unwind assembler directive is a human readable indicator indicating to the assembler that associated sub directives are related to stack unwinding, wherein the stack unwind assembler directive does not specify a function to be performed during stack unwinding.

2. (Original) The method as recited in claim 1, wherein each stack unwind sub directive indicates a stack unwind operation to be performed.

3. (Original) The method as recited in claim 1, wherein each stack unwind sub directive indicates a previously performed stack operation for which unwinding is to be performed.

4. (Currently Amended) The method as recited in claim 1, wherein each stack unwind sub directive indicates ~~one or more~~ at least one stack operation ~~operations~~ that are to be reversed by a stack unwind mechanism using the ~~one or more~~ at least one encoded data section ~~sections~~.

5. (Original) Assembly code generated according to the method of claim 1.

6. (Currently Amended) In a compiler, a method of generating assembly code to aid stack unwinding of a memory stack, the method comprising:

obtaining ~~one or more~~ at least one source code line ~~lines~~; and

generating from the ~~one or more~~ at least one source code line ~~lines~~ a stack unwind assembler directive and an associated stack unwind sub directive, wherein the stack unwind assembler directive indicates that ~~one or more~~ at least one encoded data section ~~sections~~ containing stack information to be used for stack unwinding of the stack is to be generated by an assembler from the stack unwind sub directive, wherein each stack unwind assembler directive is a human readable indicator indicating to the assembler that associated sub directives are related to stack unwinding, wherein the stack unwind assembler directive does not specify a function to be performed during stack unwinding.

7. (Currently Amended) In a compiler, a method of generating assembly code to aid stack unwinding from a set of source code, the method comprising:

generating a stack unwind assembler directive; and

generating a stack unwind sub directive, wherein the stack unwind assembler directive indicates that ~~one or more~~ at least one encoded data section ~~sections~~ containing stack information to be used for unwinding of a stack is to be generated by an assembler from the stack unwind sub directive, wherein each stack unwind assembler directive is a human readable indicator indicating to the assembler that associated sub directives are related to stack unwinding, wherein the stack unwind assembler directive does not specify a function to be performed during stack unwinding.

8. (Original) The method as recited in claim 7, wherein the stack unwind sub directive indicates a region operation designating one or more portions of a function.

9. (Original) The method as recited in claim 8, wherein the region operation designates a prologue region of a function or a body region of a function.

10. (Original) The method as recited in claim 7, wherein the stack unwind sub directive indicates which registers have been saved prior to a function call.

PTO/SB/44 (10-96)
Approved for use through 6/30/99. OMB 0651-0033
Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

(Also Form PT-1050)

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 6,892,379 B2

DATED : May 10, 2005

INVENTOR(S) : Alfred J. Huang

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

In the Specifications:

Column 5, line 31, change "Ic" to --lc--.

In the Claims:

In line 5 of claim 1 (column 7, line 62) change "one more source" to --one source--.

In line 7 of claim 7 (column 8, line 47)) change "more encoded data" to --encoded data--.

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